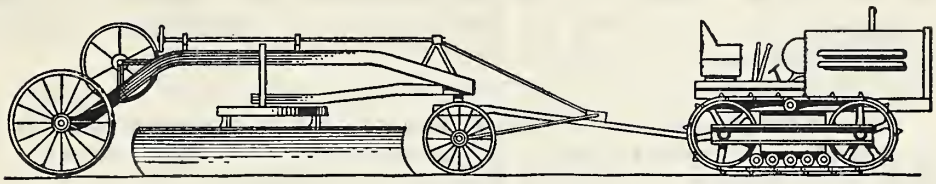
CONSTRUCTION



HINTS

UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE
WASHINGTON, D.C.

Vol. 4 December 24, 1938 No. 19

Mr. Ira G. Tanner, Senior Foreman at Camp F-12 on the Gardner Purchase Unit, Region 9, in Missouri, has developed a small test set which has proven quite successful in "trouble shooting" on telephone lines and other telephone instruments. A small sketch and explanatory notes is submitted herewith.

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On page 5 is a copy of a plan showing the construction of a tool box under the bed of a stake body truck for the purpose of carrying all loose tools and truck equipment including truck tools, crank, chains, and similar items.

This plan was designed by a CCC mechanic at the Missouri Valley, Iowa B.A.E. camp and sent in by Mr. John G. Sutton, District Engineer for the Central Region.

Drive carefully - cats have nine lives - you have but one!

(over)

TEST SET

This test set was built primarily to simplify "trouble shooting" on telephone lines. Since its construction, however, it has proved invaluable as a test set for telephone instruments, switchboards, and radios.

The panel shown is portable mounted in a box cabinet the size of the portable "S" radio sets, allowing room for clearance of the switches. The panel is of hard rubber or plywood.

"A" is an ordinary galvanometer used for testing caps and circuits. It is mounted on the back of a panel and held in place by rubber bands, fastened to back of panel. A hole is cut in the panel opposite the dial, allowing galvanometer to be read from front.

"B" is an ordinary double pole, single throw battery switch, mounted on front of panel.

"C" is an ordinary double pole, double throw battery switch, mounted on front of panel.

"D" are the terminals which may be connected with clips to facilitate making connections, mounted on front of panel.

On the front view connecting circuits are shown as dotted lines. On the rear view the circuits are shown continuous lines, since it is on the rear side of the panel that the connections are made.

For use in testing telephone lines metallic circuit: Attach line 1 and 2 to the post as noted, and attach a ground to the designated post. It is very necessary that there be a tight ground connection. With switch "C" open, close switch "B". A "short" on the line will be indicated by the needle on the galvanometer. With "B" switch open, close switch "C" to first one position, then the other. A "ground" on either line will be indicated by the galvanometer. Where the line is cleared for testing (all instruments removed) the test set will indicate trouble over a distance of from 20 to 25 miles. This varies directly with the battery in galvanometer and resistance of line. If tests are made on lines where telephone instruments are not removed, which will be most common, there will be a certain reading due to the instruments on the circuit and capacity of set is reduced.

After test set has been used several times and actual distance of trouble from set and reading of galvanometer noted, by using proportional parts, it is possible to "measure" trouble to within a half mile or less from test set by the resistance as measured by galvanometer.

By attaching test "picks" to line 1 and 2 (switch "B" closed, "C" open) an ideal test set is made for testing telephone instruments and switchboards.

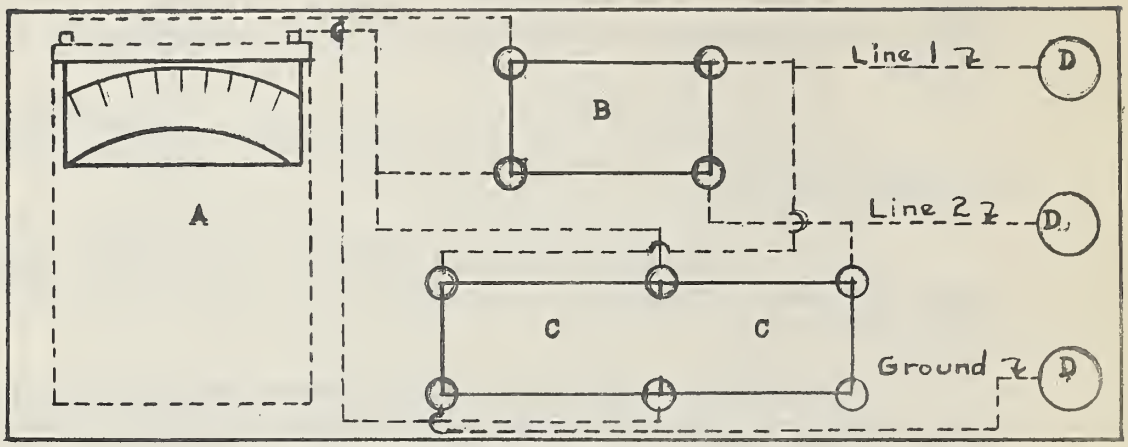
Test for shorts, grounds and opens can quickly and easily be made. Using the same arrangement of the test set, circuits can likewise be tested in radios.

To eliminated unnecessary resistance in set, solder all connections, using as little heat as possible on galvanometer connections, so that galvanometer will not be damaged. When set is not in use switch "B" should be open.

Further information regarding the set and several methods of testing clearing trouble on telephone lines, not mentioned in the Telephone Handbook, will be given on request. Also methods by which telephone lines may be used in emergencies, in spite of "opens", "shorts", or "grounds".

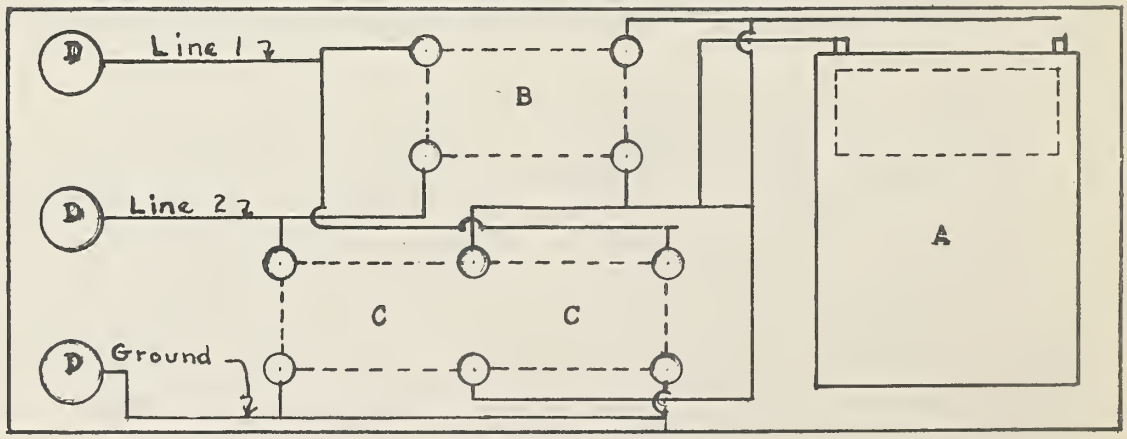
Test Set

Front View

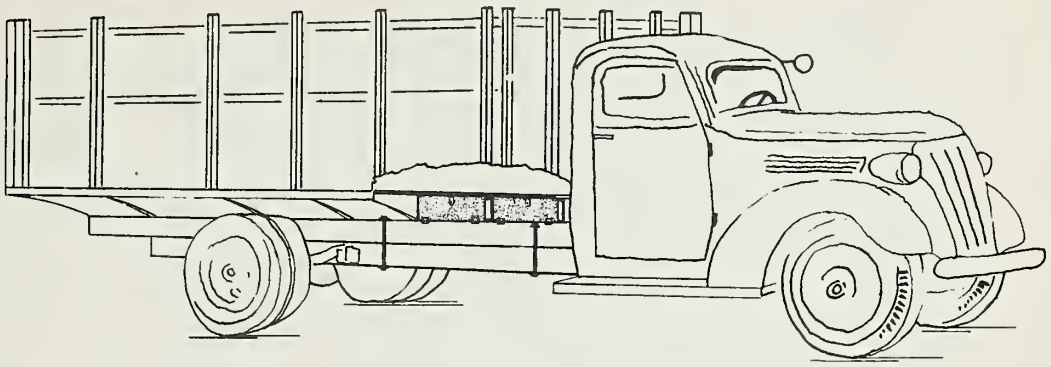


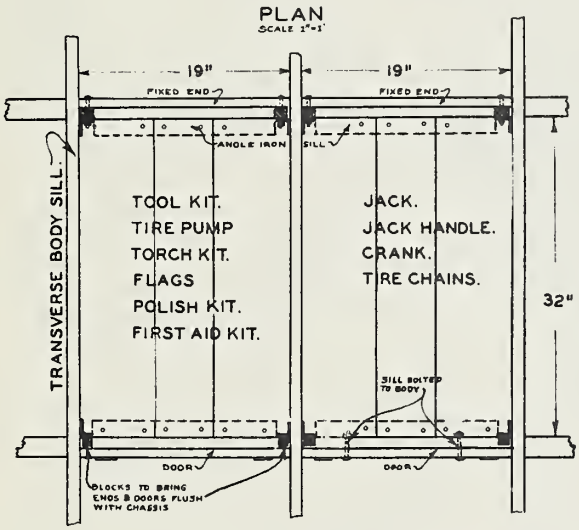
A__ Galvanometer
B__ Double Pole, Single Throw Switch
C__ Double Pole, Double Throw Switch
D__ Terminal Post

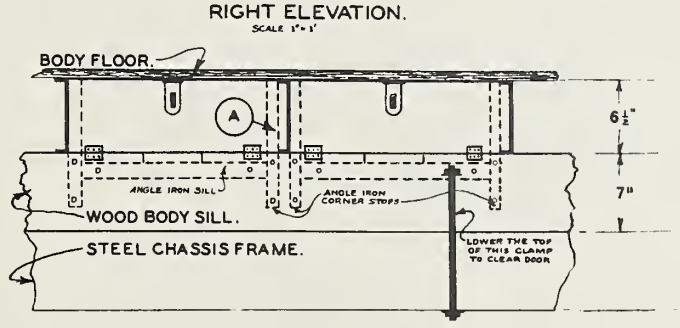
Rear View



A__ Galvanometer
B__ Double Pole, Single Throw Switch
C__ Double Pole, Double Throw Switch
D__ Terminal Post







PLAN SHOWING
AVAILABLE STORAGE COMPARTMENTS
FOR ALL LOOSE TRUCK EQUIPMENT

BILL OF MATERIAL

4 - 1" X 10" X 32"	BOTTOM BOARDS.	
4 - 1" X 8" X 20"	ENDS & DOORS.	
86" - 1½" X ⅜"	ANGLE IRON.	
12 - ¼" X 3"	BOLTS.	FLOOR SILL THROUGH BODY SILL AND TO FASTEN TWO END STOPS.
24 - ¼" X 1½"	"	FLOOR TO ANGLE IRON.
8 - ⅜" X 1½"	"	TOP HINGE BOLTS.
8 - ⅜" X 3"	"	BOTTOM HINGE BOLTS.
2 -	PADLOCKS.	
2 -	HASPS.	
4 -	HINGES.	
8 - ¼" X 2"	BOLTS	FIXED ENDS TO ANGLE IRON.

DESIGNED BY DEARL T. FRIEND.
B.A.E. MECHANIC C.C.C. CAMP D-4
MISSOURI VALLEY. IOWA.

DRAWN BY C. R. WOOD, JR. C.E.